

Amendments to the Specification

The paragraph starting at page 3, line 2 and ending at line 11 has been amended as follows.

In Japanese Patent Laid-Open No. 9-11492 or 8-039830 (which is ~~corresponding to USP 6447095~~ corresponds to U.S. Patent No. 6,447,095), the presence/absence of the ink tank is detected to prevent the ink from hardening in the inkjet printhead when the apparatus is left for a long time in an ink tank unattached state. Especially, control has been proposed, in which when no ink tank is attached, ink is completely discharged from the ink channel in the inkjet printhead by using a recovery mechanism such as a suction mechanism or ink predischARGE mechanism.

The paragraph starting at page 3, line 19 and ending at line 27 has been amended as follows.

In this state, the same cleaning sequence as in the ink tank attached state, i.e., a cleaning operation such as an ink predischARGE operation, wiping operation, or ink suction operation, is executed. Particularly, in the ink predischARGE operation, ink discharge energy generation elements are energized although there is no ink. In this case, the energy generation elements are damaged and adversely affect the normal ink discharge

performance, as is known.

The paragraph starting at page 6, line 16 and ending at line 19 has been amended as follows.

In a preferred embodiment, the ink tank comprises a plurality of ink tanks which store a plurality of types of ink, respectively, and each of the plurality of ink tanks is detachably attached to the printhead.

The paragraph starting at page 33, line 26 and ending at page 34, line 2 has been amended as follows.

Control of the cleaning operation in the inkjet printing apparatus 1 having no internal power supply, i.e., having only the external power supply, will be described next.

The paragraphs starting at page 36, line 9 and ending at page 37, line 1 have been amended as follows.

Even in the above-described control example of the inkjet printing apparatus having no internal power supply, the relative clock (soft timer) by the MPU 38 or timer 313 ~~themselves~~ may always operate independently of the attached or detached state of the ink tank as far long as the timer operation itself is possible. Time counting may be started and ended in accordance with the detachment and attachment of the ink tank.

As described above, according to the second embodiment, on the basis of the normal use state, i.e., a state wherein both the printhead 3 and the ink tank 9 are normally attached but not used, ~~continues~~ or the unattached time of the ink tank 9, the cleaning level of the cleaning operation to be executed subsequently is decided, and cleaning of the printhead 3 is executed. With this arrangement, a more appropriate cleaning operation can be applied to the printhead 3, and a satisfactory print quality of the inkjet printing apparatus 1 can be maintained.

The paragraph starting at page 38, line 26 and ending at page 39, line 21 has been amended as follows.

As a representative arrangement or principle, the present invention preferably adopts the basic principle disclosed in, e.g., U.S. Patent No. 4,723,129 or 4,740,796. This system is applicable to both a so-called on-demand ~~apparatus~~ and continuous ~~apparatus~~ apparatuses. The system is particularly effective for the on-demand

apparatus because of the following reason. That is, at least one driving signal which corresponds to printing information and gives a rapid temperature rise exceeding ~~nuclear~~ nucleate boiling is applied to an electrothermal transducer arranged in correspondence with a sheet or liquid channel holding a liquid (ink). This signal causes the electrothermal transducer to generate heat energy, and causes film boiling on the heat effecting surface of the printhead. Consequently, a bubble can be formed in the liquid (ink) in one-to-one correspondence with the driving signal. Growth and shrinkage of the bubble discharge the liquid (ink) from an orifice, forming at least one droplet. The driving signal more preferably has a pulse shape because a bubble grows and shrinks instantaneously at an appropriate timing to discharge the liquid (ink) with high response.

The paragraph starting at page 41, line 15 and ending at page 42, line 5 has been amended as follows.

In order to positively prevent a temperature rise caused by heat energy by using the temperature rise as energy of the state change from the solid state to the liquid state of ink, or to prevent evaporation of ink, ink which solidifies when left to stand and liquefies when heated can be used. In any case, the present invention is applicable to any ink which liquefies only when heat energy is applied, such as ink which liquefies when applied with heat energy corresponding to a printing signal and is discharged as liquid ink,

or ink which already starts to solidify when arriving at a printing medium. As described in Japanese Patent Laid-Open No. 54-56847 or 60-71260, this type of ink can be held as a liquid or solid in a recess or ~~through hole~~ through-hole in a porous sheet and opposed to an electrothermal transducer in this state. In the present invention, it is most effective to execute the aforementioned film boiling method for each ink described above.

The paragraph starting at page 43, line 10 and ending at line 14 has been amended as follows.

~~Example~~ Examples of storage media that can be used for supplying the program are a floppy disk, a hard disk, an optical disk, a magneto-optical disk, a CD-ROM, a CD-R, a CD-RW, a magnetic tape, a non-volatile type memory card, a ROM, and a DVD (DVD-ROM and a DVD-R).